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10/594,122

09/25/2006

Fredrik Gunnarsson

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EXAMINER

WANG-HURST, KATHY W

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,122	Applicant(s) GUNNARSSON ET AL.	
	Examiner KATHY WANG-HURST	Art Unit 4173	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/25/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-37 are rejected under 35 U.S.C. 102(b) as being anticipated by **Karlsson (US 5499386)**, cited in applicant's IDS.

Regarding claim 1, Karlsson discloses a method of assigning a handover parameter to a cell in a cellular communications system, comprising the steps of:

classifying cells of said communications system into multiple handover-related classes based on radio coverage characteristics of said cells, each handover-related class being associated with a unique handover parameter (**col. 3 lines 27-34, categories of preference based on coverage; and col. 9 lines 42-59, unique parameter hysteresis value associated with the categories**);

determining to which handover-related class said cell is associated (**col. 3 lines 27-34 associating cell with category**);

and

assigning, to said cell, the handover parameter associated with said determined handover-related class (**col. 3 lines 6-21 categorizing; and col. 11 lines 2-22, parameter corresponding to the category**).

Regarding claim 2, Karlsson discloses a method of triggering a handover-related procedure for user equipment in a cellular communications system, comprising the steps of:

classifying cells of said communications system into multiple handover-related classes based on radio coverage characteristics associated with said cells (**col. 3 lines 10-13 and col. 3 lines 26-33**);

assigning, for each handover-related class, a unique handover parameter (**col. 11 lines 4-22**);

generating a handover triggering command based on measured signal quality for a communications link between said user equipment and a base station of a cell and on an assigned handover parameter associated with the handover-related class of said cell (**col. 3 lines 16-21**); and

transmitting said handover triggering command to said user equipment, said handover triggering command allowing said user equipment to perform said handover-related procedure involving said cell (**col. 3 lines 6-21, performing handoff therefore triggering command to perform handoff**).

Regarding claim 3, Karlsson discloses a method for modifying a list of connected cells for user equipment in a cellular communications system, comprising the steps of: measuring signal quality for a communications link between said user equipment and a base station of a cell (**col. 3 lines 6-21**);

receiving a handover parameter for said cell, said handover parameter being determined based on the radio coverage characteristics of said cell **(col. 3 lines 6-21)**; and
modifying said list based on measured signal quality and said received handover parameter **(col. 8 lines 4-14 and col. 8 lines 53-59 modifying handoff algorithm therefore modifying list based on power level and distance)**.

Regarding claim 4, Karlsson discloses the method according to claim 3, further comprising the steps of:
classifying cells of said communications system into multiple handover-related classes based on radio coverage characteristics of said cells **(col. 3 lines 10-13 and col. 3 lines 26-33)**;
assigning, for each handover-related class, a unique handover parameter **(col. 3 lines 26-33 and col. 11 lines 4-22)**; and
determining to which handover-related class said cell is associated **(col. 3 lines 6-20)**.

Regarding claim 5, Karlsson discloses the method according to claim 3, further comprising the steps of:
measuring signal quality for a communications link between said user equipment and a base station of a current best serving cell to which said user equipment is connected **(col. 3 lines 6-21)**; and
generating a list update request based on a comparison between said measured signal

quality of said current cell, said measured signal quality of said cell and said handover parameter **(Fig. 11 items 129 and 136, adding and sorting list therefore generating a list update request)**.

Regarding claim 6, Karlsson discloses the method according to claim 5, wherein said modifying step comprises the steps of:

receiving a list update command generated based on said list update request **(Fig. 11 items 129 and 136 adding and sorting therefore receiving a list update command)**;
and

updating said list based on said received list update command **(Fig. 11 items 129 and 136 adding and sorting therefore updating)**.

Regarding claim 7, Karlsson discloses the method according to claim 5, wherein said request generating step comprises generating a cell add request if said signal quality of said cell is larger than said signal quality of said current cell subtracted by said handover parameter **(Fig. 11 items 133 and 129 adding to the list based on the signal strength; and col. 11 lines 5-20 subtracting hysteresis)**.

Regarding claim 8, Karlsson discloses the method according to claim 5, wherein said request generating step comprises generating a cell delete request if said signal quality of said cell is smaller than said signal quality of said current cell subtracted by said

handover parameter **(Fig. 11 item 125 clearing list therefore removing cell from the list based on signal strength).**

Regarding claim 9, Karlsson discloses the method according to claim 2, wherein said generating step comprises the steps of:

receiving a handover-triggering request from said user equipment, said request being generated based on said measured signal quality of said cell, said handover parameter and measured signal quality for a communications link between said user equipment and a base station of a current best serving cell to which said user equipment is connected **(col. 3 lines 6-20)**; and

generating said handover triggering command based on said request **(col. 3 lines 6-20).**

Regarding claim 10, Karlsson discloses the method according to claim 2, wherein said multiple handover-related classes comprise a first handover-related class and a second handover-related class **(col. 3 lines 6-20).**

Regarding claim 11, Karlsson discloses the method according to claim 10, wherein said first and second classes are selected from *at least one of*:

said first class comprises cells of a same site as a current best serving cell to which said user equipment is connected and said second class comprises cells of other sites **(col. 2 lines 24-42 currently serving cell and adjacent cells);**

said first class comprises neighboring cells of a same site as said current cell and said second class comprises non-neighboring cells of said same site and cells of other sites **(col. 3 lines 26-31);**

said first class comprises micro and pico cells and said second class comprises macro cells **(col. 5 lines 57-67 micocells and umbrella macrocells; and col. 8 line 34);** and said first class comprises high-sectored cells and said second class comprises low-sectored and non-sectored cells.

Regarding claim 12, Karlsson discloses the method according to claim 1, wherein said multiple handover-related classes comprise a first handover-related class and a second handover-related class and said communications system comprises user equipment connected to a current best serving cell, said first and second handover-related classes are selected from *at least one of*:

said first class comprises cells of a same site as said current cell and said second class comprises cells of other sites **(col. 2 lines 24-42);**

said first class comprises neighboring cells of a same site as said current cell and said second class comprises non-neighboring cells of said same site and cells of other sites **(col. 3 lines 26-31);**

said first class comprises micro and pico cells and said second class comprises macro cells **(col. 5 lines 57-67; and col. 8 line 34);** and

said first class comprises high-sectored cells and said second class comprises low-

sectored and non-sectored cells.

Regarding claim 13, Karlsson discloses the method according to claim 10, wherein a handover parameter of said first class is larger than a handover parameter of said second class **(col. 7 lines 19-39 and lines 45-64, when signals are compared, macrocell is stronger than microcell and therefore apply for a greater offset).**

Regarding claim 14, Karlsson discloses the method according to claim 1, further comprising the steps of:
determining communications traffic statistics for said cellular communications system **(col. 9 lines 8-22)**; and
re-classifying said cells of said communications system based on said radio coverage characteristics of said cells and said determined communications traffic statistics **(col. 9 lines 8-22).**

Regarding claim 15, Karlsson discloses the method according to claim 1, wherein a handover- related class is associated with a unique set of multiple handover parameters **(col. 9 lines 45-59 and col. 11 lines 4-22, categories with corresponding hysteresis).**

Regarding claim 16, Karlsson discloses the method according to claim 1, wherein said handover parameter affects a possible handover region for said cell **(Abstract).**

Regarding claim 17, Karlsson discloses a system for assigning a handover parameter to a cell in a cellular communications system, said system comprising:

means for classifying cells of said communications system into multiple handover-related classes based on radio coverage characteristics of said cells, each handover-related class being associated with a unique handover parameter (**col. 3 lines 26-33 and col. 11 lines 4-22**);

means, connected to said classifying means, for determining to which handover-related class said cell is associated (**col. 3 lines 10-13 and col. 3 lines 26-33**); and

means, connected to said determining means, for assigning, to said cell, the handover parameter associated with said determined handover-related class (**col. 3 lines 10-13 and col. 3 lines 26-33**).

Regarding claim 18, Karlsson discloses the system according to claim 17, wherein said assigning means is configured for assigning a unique set of multiple handover parameters to each handover-related class (**col. 9 lines 42-59 assigning parameters**).

Regarding claim 19, Karlsson discloses the system according to claim 17, wherein said classifying means is configured for re-classifying said cells of said communications system based on radio coverage characteristics of said cells and communications traffic statistics for said communications system (**col. 9 lines 8-22**).

Regarding claim 20, Karlsson discloses the system according to claim 17, wherein said classifying means is configured for classifying said cells into a first handover-related class and a second handover-related class and said communications system comprises user equipment connected to a current best serving cell, said first and second handover-related classes are selected from at least one of:

said first class comprises cells of a same site as said current cell and said second class comprises cells of other cells **(col. 2 lines 24-42)**;

said first class comprises neighboring cells of a same site as said current cell and said second class comprises non-neighboring cells of said same site and cells of other sites **(col. 3 lines 26-31)**;

said first class comprises micro and pico cells and said second class comprises macro cells **(col. 5 lines 57-67 and col. 8 line 34)**; and

said first class comprises high-sectored cells and said second class comprises low-sectored and non-sectored cells.

Regarding claim 21, Karlsson discloses the system according to claim 20, wherein said assigning means is configured for assigning a larger handover parameter for said first class than for said second class **(col. 7 lines 19-39)**.

Regarding claim 22, Karlsson discloses a system for triggering a handover-related procedure for user equipment in a cellular communications system, said system

comprising:

means for classifying cells of said communications system into multiple handover-related classes based on radio coverage characteristics of said cells **(col. 3 lines 26-33)**;

means for assigning, for each handover-related class, a unique handover parameter **(col. 3 lines 6-21)**;

means for generating a handover triggering command based on measured signal quality for a communications link between said user equipment and a base station of a cell and a handover parameter associated with the handover-related class of said cell **(col. 3 lines 6-21)**; and

means for transmitting said handover triggering command to said user equipment, said handover triggering command allowing said user equipment to perform said handover-related procedure involving said cell. **(col. 3 lines 6-21)**

Regarding claim 23, Karlsson discloses the system according to claim 22, further comprising means for receiving a handover-triggering request from said user equipment, said request being generated based on said measured signal quality of said cell, said handover parameter and measured signal quality for a communications link between said user equipment and a base station of a current best serving cell to which said user equipment is connected, and said generating means is configured for generating said handover triggering command based on said request **(Abstract and col. 3 lines 6-21)**.

Regarding claim 24, Karlsson discloses the system according to claim 22, wherein cells of said communications systems are classified into a first handover-related class and a second handover-related class, each of said first and second handover-related class being associated with a unique handover parameter **(col. 9 lines 42-59 and col. 11 line 12, parameter is assigned corresponding to the category therefore unique to particular class)**.

Regarding claim 25, Karlsson discloses the system according to claim 24, wherein said first and second classes are selected from at least one of:

said first class comprises cells of a same site as a current best serving cell to which said user equipment is connected and said second class comprises cells of other sites**(col. 2 lines 24-42)**;

said first class comprises neighboring cells of a same site as said current cell and said second class comprises non-neighboring cells of said same site and cells of other sites**(col. 3 lines 26-31)**;

said first class comprises micro and pico cells and said second class comprises macro cells**(col. 5 lines 57-67 and col. 8 line 34)**; and

said first class comprises high-sectored cells and said second class comprises low-sectored and non-sectored cells.

Regarding claim 26, Karlsson discloses the system according to claim 17, wherein said handover parameter affects a possible handover region for said cell **(Abstract)**.

Regarding claim 27, Karlsson discloses the system according to claim 17, wherein said system is provided in a radio network controlling node in said communications system **(col. 1 lines 23-26, MSC)**.

Regarding claim 28, Karlsson discloses a unit for modifying a list of connected cells for user equipment in a cellular communications system, said unit comprising:
means for measuring signal quality for a communications link between said user equipment and a base station of a cell **(col. 3 lines 6-21)**;
means for receiving a handover parameter for said cell, said handover parameter being determined based on the radio coverage characteristics of said cell **(col. 3 lines 6-21)**;
and
means, connected to said measuring means and said receiving means, for modifying said list based on measured signal quality and said received handover parameter **(col. 3 lines 6-21)**.

Regarding claim 29, Karlsson discloses the unit according to claim 28, wherein cells of said communications system are classified into multiple handover-related classes based on radio coverage characteristics of said cells and each handover-related class

being associated with a unique handover parameter (**col. 3 lines 6-21 and col. 9 lines 45-59**).

Regarding claim 30, Karlsson discloses the unit according to claim 28, wherein said measuring means is configured for measuring signal quality for a communications link between said user equipment and a base station of a current best serving cell to which said user equipment is connected, and said unit further comprising means for generating a list update request based on a comparison between said measured signal quality of said current cell, said measured signal quality of said cell and said handover parameter (**col. 3 lines 6-21**).

Regarding claim 31, Karlsson discloses the unit according to claim 30, further comprising means for receiving a list update command generated based on said list update request, and said modifying means being configured for updating said list based on said received list update command (**Fig. 11 items 129 and 136, adding and sorting therefore updating**).

Regarding claim 32, Karlsson discloses the unit according to claim 30, wherein said generating means comprises means for generating a cell add request if said generating means finds that said signal quality of said cell is larger than said signal quality of said current cell subtracted by said handover parameter (**Fig. 11 items 129 and 133**,

adding after signal strength condition is met; and col. 11 lines 4-22, subtracting hysteresis).

Regarding claim 33, Karlsson discloses the unit according to claim 30, wherein said generating means comprises means for generating a cell delete request if said generating means finds that said signal quality of said cell is smaller than said signal quality of said current cell subtracted by said handover parameter **(Fig. 11 items 124 and 125, clearing list therefore removing).**

Regarding claim 34, Karlsson discloses the unit according to claim 29, wherein cells of said communications systems are classified into a first handover-related class and a second handover-related class, each of said first and second handover-related class being associated with a unique handover parameter **(col. 9 lines 45-59).**

Regarding claim 35, Karlsson discloses the unit according to claim 34, wherein said first and second classes are selected from at least one of:

said first class comprises cells of a same site as a current best serving cell to which said user equipment is connected and said second class comprises cells of other sites **(col. 2 lines 24-42);**

said first class comprises neighboring cells of a same site as said current cell and said second class comprises non-neighboring cells of said same site and cells of other sites **(col. 3 lines 26-31);**

Art Unit: 2618

said first class comprises micro and pico cells and said second class comprises macro cells (**col. 5 lines 57-67 and col. 8 line 34**); and

said first class comprises high-sectored cells and said second class comprises low-sectored and non-sectored cells .

Regarding claim 36, Karlsson discloses the unit according to claim 28, wherein said handover parameter affects a possible handover region for said cell (**Abstract**).

Regarding claim 37, Karlsson discloses the unit according to claim 28, wherein said unit is provided in said user equipment (**Abstract, mobile station therefore user equipment**).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Jha (US 2005/0026619) discloses a system and method for using position, velocity or direction of motion estimates to support handover decisions.

Pedraza et al (US 7031710) discloses a method and system for load sharing between a plurality of cells in a radio network system.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KATHY WANG-HURST whose telephone number is

(571)270-5371. The examiner can normally be reached on Monday-Thursday, 7:30am-5pm, alternate Fridays, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benny Tieu can be reached on (571)272-7490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KATHY WANG-HURST/
Examiner, Art Unit 4173

/Lewis G. West/
Primary Examiner, Art Unit 2618